THE

VETERINARY JOURNAL

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Editorials.

RESEARCH WORK.

THERE may be a difference of opinion as to whether State aid and control will benefit all national constructive work in the times ahead. We are of those who believe that too large a measure of control of the milk supply would not be beneficial to the nation. The production side of the question needs perhaps more consideration than the collecting and distributing side of it. It is questionable whether too tight a control of production would not militate against individual energy and enterprise, and thus lessen rather than increase the milk supply. State aid and control of the dyeing industry has not been a success, and the individual energy and enterprise of one firm have easily beaten the State-aided movement of another source of dye-stuffs.

Medical research is, however, on a somewhat different plane from industrial research. A great deal of the former must necessarily be unproductive from a monetary point of view. Much ground will often have to be travelled for apparently little result, either scientifically or materially. There is no doubt, however, about the necessity of an adequate supply of money if medical and veterinary research are to advance and prosper and produce the good results which all professional men desire.

In the work of reconstruction after the War, when some of the finest brains in the world will be wanting fields for their activity, it is to be hoped that veterinary research will come in for a due share of consideration and recognition by our politicians and statesmen. As we have frequently stated, *the healthy development and increase of a country's flocks and herds are the surest indications of its true advancement and prosperity*, and it behoves the State to support research into the problems of animal disease liberally and whole-heartedly.

The times are hard, we know, but industrial research is being stimulated *even now*, and quite recently the Yorkshire Textile Research Committee intimated that it had an assured income of £5,000 a year. Cotton, linen, silk, and jute associations are in existence, and all working on energetic lines.

Medical research needs to keep awake, and its claims to be kept to the front by importunity and increasing vigilance. It is not hopeful and encouraging that the amount for Scientific and Industrial Research dropped during the last financial year from £1,063,325 to £148,350; and also last year a grant of £1,000,000 given for research work has not been repeated. The sum of £30,000 has been given in grants to universities, colleges, and medical schools to save the institutions from serious permanent detriment; but this sum seems quite paltry and inadequate for the prosecution of vital, nationally beneficial, and glorious work, and the real interests of medical and veterinary science need more keen and all-round visualisation by our politicians and statesmen.

G. M.

TEXT-BOOKS.

In the progress of professions and trades perhaps due credit has not been given to the writers of text-books. Whatever the sphere of activity, good instruction books help towards clear thinking and acting. Out of the jumble and scurry of the operations in the present war, well ordered first principles to check unnecessary and overlapping effort will surely receive due consideration and be recorded as sign-posts for future generations. The diseases peculiar to war will be classified and listed, and some clear, concise, and easily accessible information be tabulated and set down. The transport of horses, the care of horses and mules, the keeping of them fit in the lines and on the march, the hygiene and purveyance of meat for the army, text-books on personal hygiene and cleanliness; and food and water supply are all matters in which the ordered hand and brain can work for the future good of crowds of eager brains and willing hands. The man who never takes up a text-book nor consults it is apt to run to

seed very early in life. The writing of a good standard text-book is a work of considerable tact, discernment, and discretion. There is a difference between text-books and reference books. A text-book needs to be full, complete, and yet not vapid, abstruse, disjointed, and wandering. It is a thing that a man can rush to at any time, and come away from with a clearer brain and a difficulty changing into a well-defined step to success.

Bricks cannot be made without clay (we believe that straw is unnecessary now), and we sometimes wonder whether the many perusers of text-books ever consider how they are produced and compiled. The Germans destroyed the beautiful library of Louvain in August, 1914, with all its precious and priceless books and manuscripts, and at one and the same time registered an outrage on Belgium and a crime against humanity. Treasures and learning were very cheap in their eyes. Yet around us we see almost daily a greater loss of learning because few men hand down their accumulated wisdom, knowledge, and experience for the benefit of future generations. The loss of the apprenticeship system, the vein of pure laziness, and the spirit of the man who said "Do you think I'm going to read and study night after night and then go about telling everybody?" are chiefly answerable for this state of affairs. It is only from copious recorded and handed down experiences that the art and craft of medicine and medical science can advance. Incidentally, also, it is only from our own experience and that of others that the material for good text-books can be culled, collected, and compiled.

Text-books should be short and complete, and point the arrow to bigger works dealing more fully with any subject about which information is desired. In a word, a text-book is a pioneer for a book of reference. Most men like vital information in tabloid form in these days of rush and haste. A short and handy text-book secures the biggest circulation and perhaps does the most good. Mark Twain having dictated a short story to a lady, the latter remarked: "It's pretty short for a book." The reply was this: "Did you ever know about my prize joke? One day I went to church, heard a missionary sermon, was carried away—to the extent of a hundred dollars. The preacher kept talking—I reduced my note to fifty dollars; he talked on—I came down to twenty-five, to ten, to five; and after he had said all that he had in him, I stole a nickel from the basket." Reason for yourselves. G. M.

Original Communications.

THE CONTROL OF LICE ON HORSES, WITH ESPECIAL REFERENCE TO WINTER CONDITIONS.

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(*Concluded from p.* 253.)

Some experiments *in vitro* covering volatile substances primarily, but incidentally some non-volatile ones, were carried out as follows :—

Lice were taken in lots of eight or more and momentarily immersed in the fluids noted below, the immersion being just long enough to wet the lice and the horse hairs to which they clung ; they were then lifted out and placed with the hairs in a bottle. This was incidental work, which was interrupted at times by more urgent matters, and there are wide breaks in some of the observations.

Hæmatopinus Asini.

Kerosene.—No sign of life after dipping.

Kerosene, 10 %; *Methyl alcohol* 90%.—Some alive 1 hour and 35 minutes later ; all dead 19 hours later.

Glacial acetic acid, 10 %; water 90%.—Some alive 8 minutes later ; all dead 19 hours later.

Glacial acetic acid 25% ; *water* 75%.—No sign of life after dipping.

Glacial acetic acid 50% ; *water* 50%.—No sign of life after dipping.

Glacial acetic acid.—No sign of life after dipping.

Glacial acetic acid 10% ; *methyl alcohol* 90%.—One louse alive 3 hours and 35 minutes later, others dead ; all dead in 13 hours.

Glacial acetic acid 5% ; *methyl alcohol* 94% ; *Coal tar creosote oil* 1%.—No sign of life after dipping.

Methyl alcohol.—No sign of life after dipping.

Methyl alcohol 90% ; *fluid extract of quassia* 10%.—No sign of life after dipping.

Fluid extract of quassia 10% ; *water* 90%.—All alive an hour later ; all dead in 22 hours.

Coal-tar creosote dip (*Kreso dip No.* 1) 1% ; *Methyl alcohol* 99%.—No sign of life after dipping.

Coal-tar creosote dip (*Kreso dip No.* 1), 1·6% ; *water* 98·4%.—All alive 5½ minutes later ; all dead in 21 hours.

Liquid petrolatum (*American oil*).—Lice moved for a few moments and gave no sign of life afterwards.

Checks.—Kept at same temperatures, 21–24·5° C. ; all dead in 23 hours.

TRICHODECTES PILOSUS.

Methyl alcohol 90% ; *fluid extract of quassia* 10%.—No sign of life after dipping.

Coal-tar creosote dip (*Kreso dip No.* 1) 1% ; *methyl alcohol* 99%.—One alive in 2 hours and 50 minutes ; others dead ; all dead in 21½ hours.

Coal-tar creosote (*Kreso dip No.* 1) 1·6% ; *water* 98·4%.—One alive 30 hours later ; all dead in 45 hours.

Fluid extract of quassia 10% ; *water* 90%.—Four alive 48 hours later ; One alive 147 hours (over 6 days) later ; all dead in 7 days.

Liquid petrolatum (*American oil*).—Lice moved for a few moments and gave no signs of life afterward.

Checks.—Some were alive at the end of 103 hours ; all dead in 120 hours.

A consideration of these experiments indicates that *Hæmatopinus* only lives a short time off its host, regardless of insecticidal treatments applied, so that unless an insecticide kills rapidly, little can be inferred. Some insecticides are extremely effective, but slow in their action, and sucking lice die too soon to permit of conclusions in regard to the action of such insecticides.

Of the substances tested on *Hæmatopinus*, the following killed immediately or almost immediately : Kerosene ; glacial acetic acid in strengths of 25, 50, and 100% ; glacial acetic acid 5%, methyl alcohol 94%, coal-tar creosote oil 1% ; methyl alcohol ; coal-tar creosote dip (Kreso dip No. 1) 1%, methyl alcohol 99% ; methyl alcohol 90%, fluid extract of quassia 10% ; and liquid petrolatum (American oil). It is practically impossible to draw conclusions from the other experiments, except to the effect that the substances used are not immediately or rapidly lethal for *Hæmatopinus* when subjected to momentary immersion in them.

Of the substances tested on *Trichodectes* the following killed immediately, or almost immediately : Methyl alcohol 90%, fluid extract of quassia 10% ; and liquid petrolatum (American oil). The following were evidently effective, but slower in their action, the relatively long time between immersion and death resulting from shortening the time element in the immersion : Coal-tar creosote dip (Kreso dip No. 1) 1%, methyl alcohol 99%, and coal-tar creosote dip (Kreso dip No. 1) 1 6 %, water 98·4%. Fluid extract of quassia was evidently devoid of insecticidal action on *Trichodectes* as used (*i.e.*, by momentary immersion), for the insects treated outlived their checks.

It is rather surprising to find that either kerosene or methyl alcohol was immediately lethal for *Hæmatopinus*, but a mixture of 10% kerosene and 90% methyl alcohol was much less effective, some lice

being alive an hour and 35 minutes later. Similarly, it is surprising to find that 90% methyl alcohol with 10% fluid extract of quassia (fluid extract of quassia in the experiment with *Trichodectes* being ineffective in momentary immersion) was immediately lethal, whereas 90 per cent. methyl alcohol with 10 per cent. glacial acetic acid (glacial acid being immediately lethal in 25 per cent. solution) left one louse still alive 3 hours and 35 minutes later.

Not too much may be concluded from the foregoing experiments, but everything indicates that methyl alcohol may be used successfully in lice control in winter. The horse should be sponged with a liberal amount of alcohol, then brushed, then sponged and brushed again. If this work is not done carefully, the failure to get results will show it. While the alcohol may exert a detrimental effect on the louse egg, and probably does, an effective exposure of the eggs to the alcohol can hardly be assured by sponging, and two treatments at 20-day intervals would be indicated for eradication measures.

(3) Fatty or oily preparations are not infrequently recommended for freeing horses from lice. They are objectionable on account of the fact that such preparations are rubbed off the horse on to the stall, harness and everything else with which the horse comes in contact, and if the persons who have occasion to handle the horse escape soiling their clothing from the horse direct, they will usually succeed in soiling it from contact with these objects. Furthermore, fats and oils are frequently depilatory for horses and must be used with caution. Why a horse is so prone to lose hair on apparently trifling provocation does not seem to be well known, but it is well known that they lose it. In this connection it will be noticed that tests *in vitro* showed liquid petrolatum (American oil) to be very effective against both species of lice. Lest someone should test liquid petrolatum in practice as a louse killer, I hasten to add that it is also depilatory. My attention was called to the fact that liquid petrolatum is depilatory by Dr. David Buckingham, of Washington, D.C., about two years ago, and I have confirmed the fact by test since.

The only oily dressing I have tested to any extent as a treatment for lousiness in the horse, is horse fat. Kirk (1917) recommended this fat for oily dressings in very bad cases of mange, as a preliminary to dipping in a calcium sulphide dip. He states: "I am certainly sure that an oily dressing does blister the skin, no matter what oil is used—with one exception—and that is the oil obtained from the boiling down of carcasses of the horse. The fat obtained in this way appears to have not the least derogatory effect on the skin, but on the contrary is of very great value, and it can be confidently recommended." Kirk has nothing to say in regard to using this horse fat

to combat lice, but as it appears from investigations in the control of lice on man that such substances as petrolatum are substantially as effective as medicated preparations having petrolatum as a base, the action being primarily mechanical and consisting in coating and suffocating the louse, it seemed evident that horse fat would kill lice, and, according to Kirk's report, would not injure the horses' coats.

We tested horse fat, or a mixture of 4 parts horse fat and 1 part linseed oil, containing 3 per cent. coal-tar creosote oil, on fourteen horses, the weather at the time being very cold, sometimes above zero, and sometimes below, but seldom much above zero. The fat was obtained from a rendering tank and had a melting point around 25° C. (77° F.). The fat was melted by immersion in a container in water heated by steam until the fat was fluid, and the melted fat was applied to the horse by means of sponges or wads of cotton batting. During the cold weather then prevailing the fat on the ends of the hair would promptly chill out and solidify soon after the animals were returned to the barns, the chilled fat pasting clumps of hair together in quills. When this was brushed or combed, fat from the warmer region, close to the body, would slowly flow out on the hair and solidify in turn. The quilling effect exposed the skin to the cold, with the result that these horses would shiver in cold weather when other horses were standing still and showing no indications of being cold. Offhand one would suppose that oil or fat on the body would aid in keeping it warm, but experience proved that this was not the case, the reason being apparently the quilling or clumping of the hairs and the consequent exposure of the skin between the hair clumps.

Of the fourteen horses treated with horse fat, six were not groomed for several days after treatment, the idea being that the fat would not injure the coat and that it would serve to kill young lice as they hatched, provided they hatched. These horses suffered depilatory effects, some of them losing large amounts of hair, contrary to what Kirk's recommendations had led us to expect. The other eight horses were groomed the day after treatment and the fat removed daily with comb and brush and rag as fast as it flowed down the hairs and congealed. These horses did not suffer depilatory effects.

To test out the apparent fact that horse fat would not cause depilatory effects where it was not allowed to remain too long, four additional horses were treated. As soon as the first animal was treated the fat was scraped off as completely as possible with sweat-scrapers. A second animal was treated, and then curried immediately. A third animal was treated and sent back to the barn with instructions to curry it promptly and as often as necessary to keep down the accumulation of fat on the hairs A fourth animal was treated and then

washed down with methyl alcohol to remove the excess fat ; this was not a very satisfactory way of removing the fat. All horses were curried daily. None of them suffered depilatory effects. The use of the sweat-scraper proved the most satisfactory method of removing the excess fat and preventing depilation. Apparently the excess fat exerts a " smothering " effect on the hair follicles. This is not intended as a lucid and scientific explanation of the loss of hair ; it is, however, substantially as lucid, scientific, and plausible as most of the explanations for bald-headedness in men.

Horse fat proved entirely effective as a louse killer. It had some effect on the eggs, as only seven hatched out of several dozen tested after removal from horses treated with the fat, and none hatched out of forty-seven removed from a horse after treatment with the horse-fat linseed oil creosote oil mixture.

The eggs in both lots looked abnormal. They were discoloured, shrivelled, or contained air bubbles, as a rule. It seems quite reasonable that hardening films of fat would seal the embryo away from its necessary oxygen supply, and perhaps seal the lid of the egg against efforts of the young louse to escape from the shell.

(4) Powders are sometimes used against lice, but with the exception of sodium fluoride, which the writer (Hall, 1917) found entirely effective against biting lice, and entirely ineffective against sucking lice, powders are usually unsatisfactory. The effectiveness of ordinary louse powders is largely a function of those constituents which are simultaneously volatile and toxic. The toxic effectiveness of volatile substances is largely determined by the degree of concentration of the volatilised material, and in applying a powder of the sort to a horse one is working under a set of circumstances which make for ineffectiveness. A powder which is fundamentally good will kill some lice and stupefy others, but the latter will recover as the material capable of volatilising is driven off by the heat of the animal's body. Experiments and experience show that the idea that finely pulverised material clogs the breathing apertures of insects and so mechanically suffocates them is not tenable, or the actual injury so accomplished is usually very slight.

Inasmuch as naphthalene is one of the most effective of the powdered insecticides, being the principal constituent of many insect powders, and practically the sole constituent of " moth balls," a test was made of a mixture of approximately equal parts of naphthalene and plaster of Paris, a horse being covered with the mixture, then covered with gunny sacks with the mixtures rubbed into them, and finally blanketed for 20 minutes to hold the volatilised naphthelene as much as possible.

The horse was said to be lousy, but we saw no lice. Nine days later the horse was examined and a number of lice found.

Another horse was tested with a mixture made up on the formula of the "Lawry lice powder," but substituting a coal-tar creosote oil for the crude carbolic acid in the following formula: Mix 3 parts of gasoline with 1 of crude carbolic acid, and stir in enough plaster of Paris to make a dry powder. This mixture was applied to a lousy horse and the horse blanketed for half an hour. Nine days later the horse was still lousy.

In the control of lice on man, louse powders have proved to be of more value as palliative measures than as eradicative measures. They appear to be of service principally in tiding over individuals who become infested under conditions that do not permit of adequate insecticidal treatment at the time. Since this is the case in regard to lice infestations on man, where the clothing can be utilised to hold the powder and its vapours, still less success may be anticipated in lice infestation on horses where the vapours from volatile constituents can pass readily through the short coat of hair and escape.

(5) The application of insecticides in the form of fumes to horses is hardly feasible under the ordinary conditions of veterinary practice, as some sort of fumigation chamber must be provided in order to expose the body of the horse to the fumes and at the same time to provide the horse with air free from toxic fumes to breathe during the fumigation process. However, under conditions where the number of horses and the need of treatment warrant it, this method of treatment may be used. It has been used during the present war in the control of mange in French army horses, and the fumigant used there in the control of mange, sulphur dioxide, has also been found adequate for the control of lice. The writer has never tested fumigation as a control measure for lice.

I take pleasure in acknowledging the friendly co-operation and assistance of Dr. R. H. Wilson and Dr. L. A. Maze in carrying out these experiments.

Summary.

The best control measure for lice on horses is eradicative dipping in summer. There are numerous aqueous solutions that are satisfactory, the ones in most common use being the coal-tar dips. These preparations are effective, uninjurious, comparatively cheap, and readily obtainable. Their use in winter is feasible at times, but is limited by the danger of chilling, and consequent production of pneumonia. Eradication dipping calls for two dippings at a 20-day interval.

Of the volatile substances that may be used for lice control in winter, methyl alcohol seems to be the most satisfactory of the things

tested, as it is effective, is not too expensive; and does not injure the hair or coat. It is inflammable and somewhat unpleasant to handle. It cannot be depended on to kill eggs, so two treatments at a 20-day interval are indicated.

Of the fatty or oily substances that may be used for lice control in winter, horse fat appears to be a fairly cheap and satisfactory representative. It should be melted and applied, and the excess promptly scraped off with a sweat-scraper. After treatment the horses should be thoroughly groomed daily to remove the fat which flows to the tip of the hairs. The treatment has the disadvantage of greasing the clothing, stalls, harness, and other things with which it comes in contact. Contrary to what one might expect, horses so treated will be colder in very cold weather than horses not treated.

It is non-irritant, but if it is left on and the horses are not groomed for several days, it has a depilatory action. It appears to be injurious to eggs, but some eggs will hatch after this treatment so that eradication would call for a second treatment at a 20-day interval. Most oils, whether fixed or volatile, are depilatory for horses, and the volatile oils are commonly irritant as well, producing dermatitis.

Powders do not appear to be very satisfactory substances for the control of lice on horses. They are not especially effective on man, where conditions are better and where many tests of various preparations have been made. They apparently exert no effect on the eggs and can only be regarded as palliative, killing a few lice, and temporarily stupefying or disturbing others.

Fumigation with sulphur dioxide appears to be a dependable measure for the control of lice on horses, but it has only limited application. It appears to be a useful measure in the army, where it is intended primarily as a treatment for scabies.

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TANNIN AND TANNING.*

By P. G. BOND, M.R.C.V.S.,
Plymouth.

The subject brought forward this afternoon for your discussion is suggested to me by the prominence into which agriculture has within the past few years forced its claims as the premier industry, owing to its vast importance to us, as a nation, now that we are engaged in

* *Paper given to the Chemistry Section, Plymouth Institution.*

one of the greatest struggles for our existence since the days of the Norman Conquest.

Self-preservation is the first law of nature. The great problem of our food supply is so pressing it behoves us to make every effort in reclaiming from Mother Earth the materials for our subsistence.

I venture to think that the article tannin and the industry of tanning are important factors in bringing about the desired result. I will try and explain, first by giving a simple description of the one, then a short account of the process of the other. I wish to provide material for bringing out your ideas on what is of vital interest to all. First as regards tannin or tannic acid, an acid extracted from oak bark and from galls. It occurs in pale yellow vesicular masses or thin glistening scales. Its solubility 10 in 3 of water. Its composition $C_{27}H_{22}O_{17}$. Tannin is the astringent principle of oak bark, nut galls, and other trees, used in converting raw hides into leather, now called tannic acid. Oak bark is the dry bark of the small branches and young stems of the *Quercus Pedunculata* collected in spring from trees growing in Britain. Galls are excrescences on the *Quercus Infectoria* caused by the punctures and deposited ova of the *Deplolepis Gallæ Tinctoria*, chiefly from the Mediterranean and the East Indies. All the soluble matter of galls is taken up by forty times their weight in boiling water and the residue is tasteless.

Galls of commerce are produced as follows :—On the sides and the ends of the branches and shoots of the trees the female makes a puncture with her ovidepositer and deposits her ova. An excrescence or gall is soon formed within which the larva is developed. As soon as the perfect insect is produced it eats its way out. If we examine those galls from which the animal has escaped one observes externally a circular hole of about a line in diameter leading to a small canal which passes to the centre of the gall. But in those galls in which the insect has not put off its pupa state we find neither an external hole nor an internal canal. Levant galls are the ordinary galls of commerce. They are imported from Syria, Smyrna and Constantinople.

Sir Humphry Davy found in one hundred parts of good Aleppo galls tannic acid 26, gallic acid with a little extractive 6·2. Infusion of galls reddens litmus paper, forms an inky compound on the addition of a persalt of iron, tannogallate of iron, and a yellowish white precipitate with a solution of gelatine, tannato of gelatine. If a piece of skin depilitated by lime be immersed in the infusion and agitated with it for some time, all the tannic acid is absorbed, the filtered liquor striking a blue colour with the persalt of iron, gallate of iron, but giving no precipitate with a solution of gelatine. Galls contain a larger portion of tannic acid than any other known vegetable produc-

tion. It is this precipitation of gelatine in the cells of the animals' skin that constitutes the act of conversion into leather.

A tanner is one whose occupation is to tan hides. Tanning is the process of converting raw hides into leather by tannin. I give these explanations from the dictionary, because I am doubtful if the definitions hold true to-day.

NOW AS TO TANNING.

The manufacture of leather is one of the oldest industries in the world. Leather was required in the days prior to so-called civilisation to provide sandals for foot wear, for domestic utensils, for weapons of defence in war. The shields carried into battle were made of leather. Harness for the horses for the transport of food, merchandise and war material before the use of iron became general. For saddlery and various other things for domestic use.

The calling of the tanner was an honourable one. The business was lucrative and stable. When St. Paul went down into Tarsus as a missionary he lodged with a tanner. He was born at Tarsus. He may have been the son of a tanner. The mother of William the Conqueror was the daughter of a tanner. The Tanners' Company in London, is one of the oldest and most opulent of London companies.

The Black Jacks and utensils for the kitchen in the homes of the Thanes and Earls were of leather. The leathern jugs at Mount Edgcumbe and Cotehele are nearly 300 years old and still in use. The Glanvilles of Tavistock were tanners and had their tanpits at Whitchurch.

There was scarcely a country town of any importance but had its tanneries, its curriers and fellmongers, about fifty years ago. In Devonshire alone in or about 1850, there were 85 tanyards, now almost extinct. The then absence of railway accommodation probably accounted for this. In those days more reliance had to be placed on individual effort. Now, everything has been centralised to our disadvantage. In Plymouth there were the Tanners of Tavistock Road, the Wards of Coxside, the Cridlands of Stonehouse, besides others. The supply of hides was obtained locally: the carcasses of dead animals were always sent to the tanyard for disposal and nothing was lost. Leather of the best and absolutely impervious to moisture was manufactured and continued to be made up to the arrival of steam ships. Forty to fifty years ago the hides were brought from the Argentine and South America. Then, owing to so many petty restrictions in admitting them to our ports, the trade was directed to the Continent, where their arrival was encouraged. The examinations and their disinfections were not so severe as at our ports, and our supply fell off.

It has been said that an animal may arrive at Deptford by steamer from America to be slaughtered and skinned, the carcase sold for food, the skin restored to America in another steamship, made into leather and again returned to England to make boots with. This appears very wonderful, but of what real use is it if it is only a temporary success? The leather made in this way is not like the old leather, British make, leather made in the old way, by tanning. Chemicals, acids, are largely used. The utility of the leather is doubtful. The old tanyards and tannery businesses are swamped. No competition can be offered. The industry dies. The cheaper and inferior articles are forced and the public suffer. I say cheaper by mistake. I mean lower price. It is not cheaper but dearer in the end.

Tanning.

Bark-oak, rinded after the felling of the trees in winter, and after thorough drying, faggoted, and brought to the tannery in June and sold from £6 upwards per ton. It constitutes a period termed the "bark harvest." Local supply being insufficient, quantities were brought by ships from various places on our coast. Several hundred tons were housed or stacked and thatched.

Valonia, the acorn-cups of *Quercus Aegilops*, which are exported from the Morea and Levant, used in tanning, as they contain abundance of tannin. *Sumac*, Sumach or Shumach, the powdered leaves, eduncles and young branches also used.

The bark is ground in a mill in small crushed pieces, and is then placed into well, made, wood, lined pits, in definite quantities according to capacity of pit and water. This forms the tan liquor and its gravity is measured by an instrument for that purpose. After the various skins are placed in this liquor, and occasionally lifted out and replaced, they are passed on to other pits and so on until the long process of tanning the skin is completed. When the liquor is exhausted it is pumped or dipped out and thrown away. The tan or exhausted bark is placed into heaps and the parts of the heap exposed to air and sun form a ready fuel for any fire, the burning of which gives off a pleasant aroma.

In a more advanced state of decay the tan is mixed with water and trodden by a horse into a pulp. It is then taken in a barrow with a bench and a square of iron—9 inch—and the man, taking the pulp and patting it into the iron square, raises it pyramidically, after taking it out and placing it on a rack for drying. This was called a turf and sold for three for a penny. It formed a cheap winter fuel, especially for the poor, and many thousands were made yearly. Also the fresh tan was readily sold to conservatory owners. A large brick

trench or reservoir was built in the house and cartloads of tan were bought to fill this trench, and with the radiation of the sun this quantity of tan generated a uniform heat and was the means of heating during the night. In a more advanced state of decay it could be used as manure. Lime and alum are other substances used in the preserving of skins.

HIDES, ETC.

The supply of hides and skins was insufficient, and quantities of salted hides from Buenos Ayres and Monte Video were imported and thus helped the enormous demand for leather. The hides are skins of bullocks and horses. Skins, a general term, but applied to skins of sheep, pigs, etc. All bought by weight. Hides brought from the butcher contained the horns and that part of the skull between them, a few fleshy pieces of meat attached to the skin, and the tail. These were the tanner's perquisites, and many dainty dishes were made from the head piece, the tanner's steak and the tail. All skins were placed in pools of clear running water for a day or two, then placed into lime water for the hastening of the removal of the hair from the skin, then re-washed, before placing into the tan liquor. Skins of sheep were treated similarly for removal of wool, and at this stage are known as " Pelts." After the process of tanning, sheep skins are known as " Basils." The bullock hide is, after the lengthy process of tanning, hung on poles to dry, and in the process well rubbed at the back of skin with fish oil. When sufficiently dry, it is rolled with a heavily weighted roller on a prepared bed for that purpose. The centre part is known as the " Butt."

Horse hides may be cured by the alum and lime process, and it is " white leather " when complete. It is most useful, especially for whips, aprons, etc. The skins of the leg and head parts may be treated in the same way of curing, and are useful for gloves and rough leggings for the woodman. The parts known as " shreds " are useful to the paper makers, as size can be obtained from them, and used in the sizing of paper. This important branch of industry has departed or in some centres decreased, evidently caused by the more intense chemical preserving of hides, discovered and developed in the path of science.

The wool was a most valuable product stored and sold by the tanner and the hair of animals preserved and dried for sale to the upholsterer, saddler and mason, in their respective trades.

It has taken a European war in which we are engaged for our very existence to convince us that agriculture is the first of industries. By agriculture I mean cultivation of land, breeding of animals and their rearing, fruit growing, forestry, implement making and leather

making. This last is by no means the least. It is of no use creating agricultural colleges and schools, model farms, up-to-date buildings, going in for pedigree stock, if the agricultural labourer and those who work on the land cannot have boots made of leather that will keep the feet dry. Why should he run the risk of pneumonia, rheumatism, and sciatica, just to produce food for the dwellers in town? Have any of you been on the land in wet weather for a whole day, in your present boots?

Why must we go to Norway, Russia, Germany, America, and France, for leather? I know the difficulty myself. Only in 1914 I asked to have a pair of boots made that would stand the wet and keep my feet dry. They cost me four guineas. To-day they are quoted at eight guineas. It was not the fault of the maker that the price was so high. The leather was Norwegian. Why should an agricultural labourer be handicapped in such a way? How can he be expected to do his work in comfort? How is he to obtain the boots?

The one great question affecting agriculture is leather. With our Colonies a large number of skins could be brought here instead of their being taken to Hamburg. We should then be able to revert to the old style. The price warrants a trial. The Government are probably afraid of introducing disease through the skin. This could be got over. When the men return from the war and are placed on the land, as suggested, they must have proper boots. They will never stand it else. Who is to supply them, the Government or themselves? I take it that these chemistry meetings in connection with this Institute are taken up with a view to provide substitutes for the things we have usually relied on the foreigner to produce. It does not appear they can continue to do so. I hope it is not too late.

Why not try and recover the leather-making industry locally? A resolution suggesting this may be offered to the Board of Agriculture. An expression of opinion from the Board may be helpful. We have allowed an important trade to drift away. It will be difficult to recover, but the effort is worth making. I am of opinion that good leather is the main want in the success of agriculture. It may appear trivial. I do not think so, and, whilst not quite agreeing with the opinion expressed at the conference called to consider the defence of ancient Troy, that in the opinion of the tanner "there is nothing like leather," still there is more in the idea than at first meets the eye. If good leather is not forthcoming there will be no labourer; if no labourer no farm produce; if no farm produce no subsistence, consequently no development; if no development no function—then decay follows:

" Ill fares the land, to hastening ills a prey,
Where wealth accumulates and men decay."

To sum up, the gist of the matter is expressed in the word " Boots. '

Clinical Cases.

PARAPHYMOSIS IN THE DOG.

By HENRY B. EVE, M.R.C.V.S.,
Folkestone.

Subject.—Field spaniel used by my client for shooting purposes, and a very valuable dog.

History.—Never used for stud purposes, as far as known. Unilateral cryptorchid. Found by the keeper in the above condition, which appeared very suddenly, and without any apparent cause, which nonplussed him, never having seen one like it before, although he had been a gamekeeper for over 20 years, and said he thought he knew all that was worth knowing about dogs' ailments. Been bad three days ere I was consulted.

Symptoms.—The penis protruded out of the whole length of sheath: and was paralyzed, the " glans " and whole organ being so tremendously swollen that the prepuce could not be drawn over it. This had assumed an alarming size and colour, being of a purple hue, intensely inflamed and congested. The dog was able to micturate only in drops, and passed blood. Urine drawn off by catheter twice daily. He showed an anxious expression of countenance, and suffered acute pain. Constipation present, animal refused all food, strained violently, and arched its back as if suffering from kidney trouble. Fæces removed and by urine enema given.

Diagnosis.—" Paraphymosis."

Treatment.—Removed dog to Infirmary, applied locally ice, and refrigerant lotion to reduce the swelling, and smeared a little salad oil over organ, and tried to return, but without success. Gave Hypo. Inj. Morphia to relieve pain. I then bathed the organ with cold water, and injected cocaine, adrenalin and boric acid (Parke, Davis & Co.), which reduced the swelling a good bit, and adopted " scarification," punctured in several places with a fine suture needle, which treatment proved successful, aided by pressure and manipulation. Gave internally tablets (P., D. & Co.) for cystitis, P, boric acid, potass. bicarb, ext. triticum, buchu ext. rea-Mais, ext. hydrangea, sulphate atropine, thrice daily, and an aperient (calomel and opium) pill. Sent medicinal paraffin to give regularly daily to relieve constipation.

Diet.—Glaxo and barley-water to drink, Vichy water and milk.

Remarks.—The adrenalin appeared to act very quickly, and certainly was a great help in causing reduction, and accelerated return of penis to the sheath. Think cause probably due to dog abusing himself (masturbation).

TYMPANITES IN DOG.

By G. MAYALL, M.R.C.V.S., *Bolton.*

BROWN curly-coated retriever.—Vomiting, and abdomen measuring 24 inches in circumference just in fromt of penis. Palpitation drum-like, and no waves on percussion; in feel like a football blown up. I inserted horse trocar and canula high up and downwards and forwards in right flank. Air rushed out for three minutes. Great relief of dog and cessation of vomiting. Abdomen now measures 20 inches in circumference.

Gave aredicum liq. am. fort. 5 minims, taraxacum 1 fl. drachm, tr. nux. vom. 10 minims, and repeated next day. Could detect no foreign body in stomach or bowels. Dog made an excellent recovery.

Find no record in canine text-books of hoven in the dog; probably due to war rations.

RINGWORM IN THE DOG.

By G. MAYALL, M.R.C.V.S., *Bolton.*

IRISH terrier dog with flattish raised fibrous looking tumour on outside surface of left ear and five ringworm patches on neck and back region.

Dressed patches daily with storax, sulphur, and carbolic ointment, and removed tumour on ear and caustickedsurface with silver nitrate daily. After three days gave dog a nascent sulphur bath with creolin in very dilute solution (a teaspoonful to 4 gallons of warm water), and continued dressing of ringworm areas. There were few scales in the affected areas, but the bare places were well defined. Repeated sulphur bath at weekly intervals. The hardest thing to cure was the ear; but colsorlene paste (see p. 415 *V.J.*, Nov., 1917) painted over the raw surface after causticking helped materially.

The litter in the kennel was frequently removed and burnt.

INTERESTING CASES.

By J. R. BAXTER, M.R.C.V.S.

WOUND IN CALF.

Steer calf 9 months old and strong; called on May 7th, to see if anything could be done; found calf down on side with a wound 4 ins. long high up on right flank, through which about sufficient small intestine

to fill a peck measure was protruding and a man with an exceedingly dirty coat sleeve and hands was endeavouring by *grabbing* at it to prevent more coming; case looked pretty hopeless, but as owner was pressing, decided to try; so washed with perchloride solution followed by normal saline in quantity and warm, replaced gut and sutured with tape; left instructions to keep quiet as possible and feed on thin gruel for a few days. I only saw this case twice more, at intervals of 3 days, and the calf never looked back; temperature only rose one degree all through and appetite never failed. I remember an almost similar case in a horse staked in groin, a few years back, and similarly treated, which, except for an enormous swelling which gradually subsided, went on equally well. Moral, never despair. (But why no peritonitis?)

STOPPAGE IN STEER.

Two-year-old steer, stoppage; called on May 4th, gave a good dose of linseed oil, stimulants and fluid extract Nux Vomica, and left 3 full doses Liq: Ammon: Acet: Fl. Ext. Nucis Vom., to be given in linseed gruel every six hours; no effect. May 6th, similar treatment with the addition of a full dose of ol. Croton; no effect. May 8th, continued stimulants and 2 injections strychnine and arecolin; result, a few small pieces of dung not particularly hard. May 9th, two more injections strychnine and arecolin, and at last bowels worked freely. Although this case took all this, there was never at any time any tympanitis and very slight pain, and only a slight rise in temperature. I should add that copious enemata were given all through the treatment and the steer has done well ever since.

CURIOUS STATE IN A COB'S TAIL.

Called to see a cob's tail. This was a mare, undocked; had been turned out for two months; owner had noticed nothing the matter till one day the flies seemed very busy, when he had the mare up and called me in. On examination the whole of the hair on the dock shelled off in a mass like a cow's horn, and left the dock raw and bleeding; there was also some ulceration round anus and vulva. Treated by amputating about 6 ins. off end of dock, washing with normal saline three times daily and dusting with pure potass. permang. powdered. Everything healed and hair grew well in a short while. What was the cause?

CASTRATION OF CRYPTORCHID BOAR.

By H. HOWARD, D.V.S.

In performing this operation, I find it best, but not essential, to have the pig's bowels empty. By the use of short ropes looped round the hocks, I hang the pig up in a good light place. This can be accomplished by driving two spikes into the side of a building, or better still, by hooking the ropes into the hooks of a short single-tree and raising it by pulley or small block and tackle. I then have the assistant steady the pig by holding the front legs. Hanging the pig up causes the intestines to gravitate to the bottom of the intestinal cavity, out of the way. I then clip the hair and paint the seat of operation with tincture of iodine, and make an incision about one-half inch on either side of the median line and about one inch below the bladder, making the incision about three inches long. My hands washed clean in an antiseptic solution, with my two index-fingers I part the edges of the wound, bringing the testicle or testicles into plain view. They are quickly removed. If both testicles are in the abdominal cavity they can both be removed through the one incision. The wound is then closed with through-and-through interrupted sutures. The pig is then placed in a clean pen or yard. I have never had any bad results from this operation. Those who have not tried locating the testicle by sight should try it and see how easily the operation is performed.—*Journal of A.V.M.A.*

General Articles.

AMERICAN ARMY VETERINARY SERVICE.*

Regulations Governing Voluntary Enlistment in the Enlisted Reserve Corps of the Medical Department.

Section 151 (b), Selective Service Regulations, provides for voluntary enlistment in the enlisted reserve corps of the Medical Department of the the Army as follows:

> "Section 151 (b). Under such regulations as the Surgeon General may prescribe and upon receiving permission from the Surgeon General to do so, any medical student, hospital interne, dentist, dental student, veterinarian, or veterinary student may enlist in the enlisted reserve corps of the Medical Department, and thereafter upon presentation by the registrant to his Local Board of a certificate of a commissioned Officer of the Medical Department of the Army that he has been so enlisted, such certificate shall be filled with the Questionnaire, and the registrant shall be placed in Class V on the ground that he is in the military

* *Reproduced from the Journal of the American Veterinary Medical Association.*

service of the United States. These is no other ground upon which such persons (as such) may be placed in a deferred classification."

The object of this provision is to enable the military authorities to place the above mentioned class of registrants in the military service where their experience and training can be utilized to best advantage.

For the purpose of obtaining better qualified officers in the Medical Department it is the intention of the Surgeon General, if conditions permit, to allow medical, dental, and veterinary students to complete the course for a professional degree; and to allow hospital internes one year of practical training in a hospital. For this reason these men, after enlistment in the enlisted reserve corps, will be left on inactive duty until the desired training has been obtained; provided, however, that they make satisfactory progress, and that the conditions for obtaining such training are adequate. They may, however, be called to active duty at any time, if the need for their services is sufficiently urgent.

Since graduated dentists and veterinarians have already received a training adequate for the purposes of the Army it will not be the policy of the Surgeon General to leave them on inactive duty; but they will be called to active duty as soon after enlistment as their services can be utilised in the enlisted force of the Medical Department. Where practicable, they will be assigned to duty in the line of their professional work.

For the purpose of attaining these ends, the Surgeon General prescribes the following regulations:

(1) Permission to enlist in the enlisted reserve corps of the Medical Department will be granted in the case of medical, dental, and veterinary students, hospital internes, dentists, and veterinarians, only to students in, and to graduates of, well-recognised schools.

(2) The term "student" in these regulations shall mean a bona-fide member of one of the regular classes in the regular course for the professional degree, in a well-recognized school. Such bona-fide membership should be attested by an affidavit from the dean of the school, or from his authorised agent, duly executed before a notary.

Note A: In the case of Medical Schools the "regular course" is understood to mean the usual four-year course leading to the degree of M.D. "Special," "pre-medical," graduate, and "post-graduate students in medical schools, and persons studying medical subjects outside of schools which are legally authorized to confer the degree of doctor of medicine, will not be considered "medical students" within the meaning of these regulations.

Note B: A medical school which offers only part of the

regular course for the degree of M.D. may be recognised, provided the school is maintained for this purpose, and the equipment and teaching are equal to the standard of well recognised medical schools; and provided the students of said school are acceptable for advancement in other well-recognised medical schools, which give a complete course for the degree of M.D. This provision refers particularly to the medical schools of universities which offer only the first two years of the regular medical course.

Note C: In those medical schools which require for the degreee of M.D. a fifth year spent in hospital or laboratory, the member of the fifth class shall be registered as "hospital-internes," within the meaning of these regulations, and not as "medical students."

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Note D: Restrictions corresponding to those for medical schools and medical students in Note A shall apply in the case of dental schools and veterinary schools, and in the case of dental students and veterinary students.

(3) A "bona-fide" student, within the meaning of these regulations, is one who has been duly registered by the school as a member of his class at the beginning of the school term; who has fulfilled the requirements of the school for admission to said class; who has been in attendance since the beginning of the school term, in accordance with the requirements of the school; and has satisfactorily done the work of his class to date. Unless a student has fulfilled all of these requirements, the dean should not issue to him the affidavit mentioned in Section 2.

(4) In the case of a hospital interne, a dentist, or a veterinarian, who is a graduate from a well-recognised school, the fact of graduation from said school must be established by an affidavit from the dean of the school, or his authorised agent, duly executed before a notary; which affidavit shall give the full name of the graduate, the name and location of the school, and the year in which the degree was conferred.

(5) The term "hospital interne," within the meaning of these regulations, shall indicate a graduate from an approved medical school, or a student in the senior class of such school, who has received an official appointment in a hospital or medical school, which appointment involves either the care of hospital patients, or such advanced scientific study as will fit him for special scientific medical work in the Army.

(6) Permission for "hospital internes" to enlist in the enlisted reserve corps of the Medical Department will be granted only when the conditions, in the opinion of the Surgeon General, are satisfactory

for the purpose of training medical officers for the Army, and only to such number of internes in an approved institution as the Surgeon General may determine. Such permission will be further dependent upon the time of such appointment as interne, its duration, the character of the work, and the opportunities for training afforded the interne.

(7) The Surgeon General will not recognise interneships in hospitals, sanitoriums or other institutions conducted for profit; or in small private hospitals (50 beds or less); or new interneships in any hospital, if established or added since May 18, 1917, to those previously existing, unless such new interneships are necessitated by and are proportional to an increase in the bed capacity of said hospital.

(8) The approved period of interne service shall not exceed one year; it may begin, under suitable arrangements, any time within the last four months of the medical-school course; it must begin otherwise as soon as practicable after graduation; it must be completed within sixteen months from the last day of the month in which graduation occurs; and, if there is an interval of more than one month between the time of graduation and the beginning of the recognised interneship, the time must be spent in a way that will, in the opinion of the Surgeon General, improve the training of the graduate for army purposes. This intervening time, even if spent in a recognised hospital position, will not necessarily be counted as part of the year of interne service that may be allowed.

(9) Permission for voluntary enlistment in the enlisted reserve corps of the Medical Department is hereby granted by the Surgeon-General to medical students, dental students, and veterinary students in well-recognised schools (as defined in Section 1), provided they present to the recruiting officer affidavits that they are *bona-fide* students in said schools (as required by Section 2); and recruiting officers are authorised to accept for enlistment in the enlisted reserve corps of the Medical Department those students who fulfill these requirements, and to enlist them, if acceptable, under orders and regulations governing enlistments for the United States Army.

(10) Permission for voluntary enlistment in the enlisted reserve corps of the Medical Department is hereby granted by the Surgeon-General to dentists and to veterinarians who establish, to the satisfaction of the recruiting officer, in accordance with the requirements of Section 4, the fact of graduation from a well-recognised school; and recruiting officers are hereby authorised to accept for enlistment in the enlisted reserve corps of the Medical Department those dentists and veterinatians who fulfil these requirements, and to enlist them, if acceptable, under orders and regulations governing enlistments for the United States Army.

(11) All others, including " hospital internes," who may be eligible for voluntary enlistment in the enlisted reserve corps of the Medical Department under Selective Service Regulations, Section 15 (b), and by these regulations must receive permission individually from the Surgeon-General By direction of the Surgeon-General.—*Journal of A.V.M.A.*

AN EFFORT TO RETURN THE AMERICAN VETERINARY SERVICE TO THE QUARTERMASTER CORPS OF THE ARMY.

In a Bill, H. R. 9867, introduced in Congress, the following paragraph was included ,—

So much of section sixteen of the Act making further and more effectual provision for the national defence, and for other purposes, approved June third, nineteen hundred and sixteen, as provides that the Veterinary Corps as therein constituted shall be a part of the Medical Department of the Army, is hereby amended so as to make the Veterinary Corps a part of the Quartermaster Corps of the Army ; and, further, so as to authorise appointments of reserve veterinarians in the Veterinary Corps upon the recommendation of the Quartermaster General of the Army. Provided, that all appropriations made for the purchase of veterinary supplies and the hire of veterinary surgeons shall be available for the purpose for which made, and shall hereafter be disbursed through the Quartermaster Corps.

We understand this measure was not passed, on the point of order that it was new legislation included in a Bill for appropriations. Army veterinatians were formerly in the Quartermaster Corps, and there seems to be evidence that the combination was not a happy one. What bearing the reference in the Bill to all appropriations for the purchase of veterinary supplies and *hire* of veterinary surgeon has upon rank for veterinarians is not clear. In the past, we believe a Quartermaster has not been particularly sympathetic toward rank nor generally appreciative of the work of the profession. Veterinarians have fought for many years for the recognition which has now come to them, and any suggestion of retrogression should be promptly and earnestly counteracted. The association of the Veterinary Corps with the Medical Corps gives it recognition as a profession. The relations have been pleasant, and there is a closer and more sympathetic relationship between human and veterinary medicine than the " hire" of the latter in a Quartermaster Corps. The present association with the Medical Corps unmistakably stands for greater efficiency for the veterinarians, and efficiency in all branches is just what is needed to win in this war. Veterinary service among our allies has demonstrated its efficiency. We should profit by the experience of others. The

fact that an effort has been made to disrupt the present satisfactory conditions of the veterinarians may indicate that further attempts are to be made. The profession should heed the warning and be on the alert to oppose any action that offers a suggestion of retrogression. —*Journal of the American Veterinary Medical Association.*

Translations.

THE DIAGNOSIS AND THERAPEUTICS OF GLANDERS.*

THE author shows the difficulty of diagnosing clinically, suppressed glanders, and demonstrates the diagnostic value of mallein, describing the reactions which it produces if injected subcutaneously in animals suffering from glanders, and especially if injected intrapalbebrally.

He lays stress on the pathogenic mechanism of the mallein reaction, and explains the difference which exists between the reaction itself and the phenomena of anaphylaxis. He shows it also from the results obtained by injecting mallein, sensitised in vitro, according to his own methods. The above (maleina sensibilizzata in vitro), whilst it causes glanders subjects to react, has absolutely no effect on the healthy animals. In the case of an anaphylactic manifestation this ought not to be so, because the sensitised mallein (prepared in vitro) contains anaphylactic toxin, the action of which is also resented by healthy animals.

The author also speaks briefly about serum diagnosis (agglutination and deviation of the complement), showing their insufficient practical value for the diagnosis of glanders, and advising that they be used as auxiliaries to the mallein test.

Speaking then of the bacilli in natural and experimental glanders in chronic and acute cases, he states that he has never succeeded, in his many experiments carried out in the Glanders Research Laboratory at Brian in isolating the bac. mallei. from the blood of a horse, whilst he has found it to be constantly present in glanders of the donkey, and in the blood of experimentally infected guinea-pigs.

He points out what an important contribution his researches are on the pathogenesis of glanders, upholding his view against that of many authors that the pulverisation and introduction of the bacilli of glanders into the trachea provokes local lesions in the lungs, sometimes accompanied by secondary lesions in the nasal cavity.

* Conference held by Prof. G. Fiwzi at Cervignano, in the Conference Hall of the "Direzione di Sanita d'Armata." (Published by the same, Turin Schioppo. 1917.)

On the properties of serum of animals hyperimmunised against glanders, and on the selection of animals for the preparation of serum rich in glanders' anti-bodies (E. Bertetti and G. Fiwzi, Extract from Vol. XXVI, 5th series, 2nd sem., 5th fasc. Rome, September, 1917.

Referring to the therapeutics of glanders, the author goes quickly over all the attempts made since 1880 to cure glanders, and explains his own experiments, all of which had a negative result, whether using carbolic acid and a solution of iodine and iodide separately or in conjunction, or whether using mercurial and arsenical preparations separately or together.

After that the author goes into the subject of the complete cure of glanders. On this subject he has carried out since the beginning of the war special researches, to which he also refers in his publication, "The Properties of the Serum of Animals Hyperimmunised against Glanders, and on the Selection of Animals for the Preparation of Serum rich in Glanders Anti-bodies." In the above mentioned researches, some of which are absolutely new to the study of the therapeutics of glanders, he deals with, respectively: (1) Toxin Mallein Therapy; (2) Vaccine Therapy; (3) Bacterio Toxin Therapy; (4) Sero Toxin Therapy; (5) Sero Bacterio Therapy; (6) Sero Therapy.

Toxin Mallein Therapy.

The author, in order to avoid several difficulties, prepares a mallein (Brian) of fixed and constant toxicity. The experiments which he made with this mallein to cure animals suffering from lung glanders show that recovery is possible when the animal is capable of producing a strong reaction and of producing many anti-bodies, that is, when the animal is in good condition.

He has cured in that way, and under the above mentioned conditions, a considerable number of animals (which had been suffering from glanders for several months), notwithstanding hard work and deficient feeding. These did not react any more to mallein, and did not infect the donkeys living with them.

When, on the other hand, the affected animals are thin or cachectical, and the disease advanced, toxin therapy is not indicated. But even in those cases in which the mallein treatment is possible, the author maintains that the use of mallein in the treatment of glanders will never be on a large scale, because the dose must be regulated by the condition of the animal, which is not possible in practice, and also because the animals under treatment must be looked after very carefully by experts, seeing that the overlooking of a single reaction may lead to the failure of the treatment.

Vaccine Therapy.

The researches made on the vaccine therapy of lung glanders are entirely original. The author has used many strains of glanders bacilli of medium virulence as a curative vaccine. He has experimented on two different groups of horses with a vaccine sterilised

by heat, and also with a vaccine sterilised chemically. A third group of horses were treated by him with mallein vaccine therapy. The results obtained led the author to the conclusion that it will be possible to cure the chronic forms of lung glanders. But both the above mentioned methods are contra-indicated in every form of acute glanders. Good food, strict attention to hygiene and rest, are necessary.

As for the methods of passive immunisation (serum therapy), although one has already tried to prepare an anti-glanders serum, no one has yet tried to hyperimmunise horses with dead or living bacilli of different degrees of virulence, either alone or with their toxins. The preparation of serum rich in glanders anti-bodies was tried by the authors from the donkey, mule, horse, and ox, and has led to really encouraging results.

The authors add that they have not hyperimmunised the animals with the hope of obtaining a serum possessing the preventive and curative properties, because they maintain that the serum is of no value for injections against infectious nodular conditions.

It was their intention to :—

(*a*) Use the above-mentioned serum, associated with mallein, in acute glanders with fever, and in which they had found toxin-mallein therapy contra-indicated.

(*b*) To prepare bacilli sensitised with the same serum, to diminish the strong reactions, both local and general, which usually accompany the injections of virus in the attempts at vaccine-therapy.

(*c*) To prepare a vaccine with mallein condensed and sensitised by means of anti-glanders serum, using the three methods, Besredka, Vallée, and Guinard.

The authors cannot yet declare the results of their experiments on horses suffering from lung glanders, but they can show—

(*a*) That the anti-glanders serum possesses strong precipitative qualities, much agglutinative power, and contains many specific bacteriolysins.

(*b*) That the serum that is richest in glanders anti-bodies is that of the ox, which has been hyperimmunised, and that the quantity of glanders anti-bodies is inversely proportional to the degree of resistance against glanders possessed by the animal producing the serum.

(*c*) That the mallein shows itself to be incapable of real immunising action. The animals treated with the injections of mallein associated with bacteria give a serum which is far less rich in anti-bodies than the animals treated with bacilli alone.

EFFECTS OF ASPHYXIATING GAS ON THE HORSE.

FRANÇOIS, writing in *Recueil d'Alfort*, tells of the effect of suffocating gas emitted from shells on horses that are in contact with more or less dense waves of gas. Following the accident the symptoms are very alarming; horses most affected hold down their heads keep their mouths half open, and the nostrils are dilated; they seem to seek a position which will assuage their sufferings; they lie down cautiously on one side then get up soon after; they seem to have all their senses. Respiration is dyspnœic, short, hurried; the heaving of the flank marked; the number of respiratory movements is 90 to 110 per minute; groan at each respiration; dry, abortive cough, frequent, as in broken wind. Light, frothy discharge, blood-flecked from nostrils. Depressed pulse, 50 beats per minute. The pituitary membrane is pale, slightly saffron-coloured, the conjunctiva the colour of wine dregs. No fever; at first the temperature is even sub-normal (36·5°). Percussion is painful, but shows nothing abnormal. On auscultation, very pronounced bronchial râles; sibilant râles and wheezing noises at the entrance of the chest; later on quite a noticeable epidermic chill.

In spite of the gravity of the symptoms the sick horses soon chip up. Those least affected are cured in five days; the worst cases last about twelve days. After results are *nil*.

The difference of the gravity with which horses are affected is partly dependent upon the quantity of gas inspired, and partly on more or less violent muscular efforts made at the time of the accident, and which involve more frequent and full respiratory movements.

Treatment will be chiefly preventive and consists in the carrying of an appropriate mask. Certain army veterinary surgeons affirm that the use of a simple nose-bag or a simple net stuffed with damp hay is sufficient, with abstention from all muscular effort (immobilisation at the place or movement at the walk) to protect horses from grave attacks. Curative treatment will be simple: avoid useless disturbing of the animals; put them in dark places well aerated (forests), briefly, try to procure them the maximum of air possible. A full diet the first two days. Bleeding is useless; injections of caffeine practised in grave cases have not appeared to influence the course of the malady. All observations as regards inhalation of gas in horses have shown that they are less lastingly affected than man and the small animals, the dog in particular. François emits the hypothesis that the length of the trachea and the development of the branching bronchial tubes lessen the effect of the gases. G. M.

Abstracts.

PITFALLS IN CASTRATION.

By JOHN A. JAEGER, D.V.M.

Last spring while out castrating colts I drove into one farmyard where there were two colts to castrate. I castrated the first colt in the standing position without any trouble. I put the emasculator on the cord ; the colt threw himself before I could get the emasculator off. He was on the ground, so I just let him fall with the emasculator on the cord, as I have done many times before. When he got up I took it off, and removed the other testicle without any more trouble.

The other colt was castrated in the recumbent position, because he was a high flanker on one side.

The next day the farmer called me up and said if I did not come and stop the first colt from bleeding he would certainly bleed to death. I went out and soon saw that it was not blood, but a serum oozing from the incision on the left side, this being the first testicle I took out when the colt threw himself ; the other side was all right. I told the farmer that if the colt did not bleed faster than that, he could bleed all his life, and not bleed to death. The colt had no fever, so I advised that he be turned out to pasture. The next day I drove by, but the farmer was not at home. I took a look at the colt again. His belly looked considerably drawn, and his temperature was 102.6 degrees F. The serum was still oozing from the left side. The next day the farmer called me up again and said the colt was still bleeding. When I got there and saw the colt from a distance he presented the most perfect picture I ever saw of peritonitis. His temperature was 106°F, and his breathing was laboured ; his abdomen was much tucked, and he would just stand still in one place and would neither eat nor drink. On making the colt walk, at intervals a clot of blood would fall from the left-hand cut about the size of a small hazel nut. To satisfy the farmer, I cast the colt and packed the left-hand cut with sterilised gauze ; at the same time I knew that it was not going to remove the trouble. I knew also that the peritonitis was not caused from infection, as my instruments were sterile.

I left some stimulants and febrifuge, and told the farmer the prognosis was not favourable, and if the colt died, to let me know and we would "post" him and see if we could not find out the cause of death. I did not hear from the farmer the next day, but the following day he called me up and said the colt was down and could not get up. I told him to let him alone and to call me as soon as he died, which was the next morning. I went out and on "posting" I found about one and a-half gallons of blood-clot in the abdominal cavity. On looking further I

found that the left spermatic artery was ruptured about half way between its origin and where it goes into the inguinal canal. The internal inguinal ring was also somewhat enlarged. This artery was not bleeding but had healed. The intestines along the floor of the abdomen showed inflammation.

To this day I have never been able to induce the farmer to believe it was not my fault; and he always says if I had castrated this colt in the recumbent position he would still be alive. He also says he will never permit anyone to castrate another colt for him in the standing position. I castrate around 250 colts every year and this is the first one I ever lost from castration; and I have it charged up against the standing operation. Hereafter I shall castrate all colts in the standing position or all in the recumbent position on the same farm, and this pitfall will not occur again.

I think the time will come when the veterinary profession will abandon the standing operation. I believe it will redound to the credit of the profession. I am not saying this because I cannot perform the standing operation, as I have in the past used this method almost exclusively. But here is the way it worked with me when I came to this location. A quack here was castrating colts standing and used clamps, for a fee of $1.50 each. He was good at it. After getting $5.00 out West, $1.50 did not look good to me. I saw a lot of the farmers before castrating time and they all told me that if I did not castrate their colts standing, I could not do it for them. They also asked me what my fee was going to be. I thought it over, and then decided I would go the quack one better even if I lost a few colts the first year. I put the fee at $2.00. When a farmer would ask me my fees I would tell him $2.00. He would say, "Well, that is only fifty cents more and we want to keep you here, so go ahead." Then I would inquire how he wanted it done, and if he did not care, down went the colt; and when I had finished they would say, "That is the best job I ever saw done, and the only way it will be done hereafter." There is more work to the recumbent operation, but one can charge more, and the clients pay the fee without complaint.

The next year I charged $2.50 and got all the colts I wanted. Last year I charged $3.00 for the first one, and $2.00 for each additional colt on the farm, and never lost a client because of the charges. I castrated one straight colt last year that I charged $10.00 for, and the farmer never said a word when he paid me. It took about two hours to do the job, as we had to halter-break him first before I could get the harness on to him.

In the standing operation I can do the job if everything is all right and be back in my car in the time it takes me to put the harness on a

colt. The standing operation is quicker and easier for the veterinarian, and that is why so many veterinarians get only a fee of $1.00, they don't make enough work out of it. The recumbent position entails more work, but if one gets extra pay that objection vanishes. —*Journal of A.V.M.A.*

GASTRO-INTESTINAL LAVAGE AGAINST WORMS.

Messrs. M. C. HALL, Ph.D.D.V.M., and MEYER WIGDEN, M.A., writing in the " Journal of the American Veterinary Medical Association " for January 1918, give the results of their experiments with gastro-intestinal lavage against worms in the dog. The method is to administer first a saline purgative, then free the bowels of all material with a gallon or two of soapy water until the fluid comes out of the mouth as fast as it runs into the rectum. After flushing the dog with the soap solution, he is then freely flushed with normal saline solution. The injection of the fluid is perhaps best accomplished by gravity, using a funnel and tube, but a force pump and city water pressure have also been used.

The authors experimented on nine dogs and conclude that gastro-intestinal lavage, like most of the medicinal anthelmintics, has not the entirely dependable efficacy which is usually credited to it by those who use it ; it may be useful as a mechanical aid to the removal of worms but its value is less than that of properly selected medicinal anthelmintics in suitable doses.

It is of great value in cases of poisoning in dogs and cats where lavage can be given in time to wash out some or all of the poison from the digestive tract before the absorption of a lethal dose.

It is easy and rapid with some dogs, but slow and tedious with others. Difficult cases may be given 1-20th to 1-10th grain of apomorphine hyd., before injecting, and afterwards the fluid generally comes right through..—G.M.

Since recording the cases of " Toxic Enteritis and Constipation in the Dog " in the VETERINARY JOURNAL, for April, 1915, p.p. 186-187, we have used lavage on two dogs brought to the infirmary for suspected poisoning (mineral) and on two suffering from toxaemia and digestive trouble. The results in all four cases were good. We, however, strongly recommend *the medicinal paraffin treatment along with lavage.* The two agree well. We have been wondering whether, if liquid paraffin had been used in the above experiments along with lavage, the treatment might not have been more effective against worms.—(SUB-EDITOR V. J.)

CRYPTORCHIDISM TREATED MEDICINALLY.

MART R. STEFFEN, writing in the *Journal of the American Veterinary Medical Association*, says:—

In veterinary practice animals, more particularly horses, in which the descent of one or both testicles into the scrotum has not taken place normally, have always been considered solely from the surgical standpoint. No effort to correct the condition has been made from a medical standpoint. Usually the colt in which a testicle does not come down into the scrotum by the time it has reached the end of its second year of life is considered a confirmed "ridgeling," and a case for the surgeon only.

This is not as it should be if the experience of human medical practitioners can be applied to veterinary subjects. Human beings with an undescended testicle are treated medicinally, and frequently the results are all that can be desired.

There is no very evident reason why veterinarians should not attempt the correction of this abnormality in colts by the use of proper medical treatment.

AGRICULTURAL COLLEGE 18 SEP 1914 FARM

Just exactly what this proper medical treatment would be is not so plain, but in human subjects some fine results have followed the administration of thyroid extract. This treatment has been used successfully for defective children.

I would recommend that the same treatment be used in colts. The administration of the thyroid extract should be commenced just as soon as it is evident that the colt is tardy in effecting the descent of one or more testicles.

We have every right to expect good results from this treatment in horses, because everything points to a deficiency of some vital secretion or function in cryptorchids. Ridgelings are really defectives. They are imperfect in physical development and their temperament is usually erratic. These imperfections cannot reasonably be attributed to failure of the testicles to descend normally.

The failure of the testicles to descend in a normal manner is more apt to be due to this defective condition, contrary to popular belief. Just why thyroid extract should be indicated for the correction of this abnormality is not easy to explain, and I recommend it only because it has given good results in similar cases affecting human subjects.

The important item to bear in mind is early diagnosis. To bring good results treatment must begin before the tendency toward cryptorchidism has been made permanent by the development of structures concerned in the phenomenon.

The successful treatment of this abnormality by medicinal means would be of especial value in cases occurring in pure-bred males whose procreative ability is desired.

A DELUSION THAT DIES HARD.

In a recent number of a certain publication there is a report headed "Ruptured Stomach." The case was a 1,500 pound grey gelding, and when first seen by the doctor he was walking round his stall and vomiting every few minutes. Temperature normal; pulse hard and fast; respiration fast and laboured.

Diagnosis.—Rupture of the stomach. By giving a dose of lobelin sulphate the pain was abated for an hour, and then the vomiting commenced again. Now was this a case for lobelin sulphate or was it a case for the stomach tube? Supposing the late Dr. Knisley had read this article, what would he have said? It is almost enough to bring him back.

After a stomach has ruptured will a horse vomit? Of course he will not—because he cannot; and yet here was a report of one doing that very thing. Lobelin sulphate is all right in its place, but it certainly has no place in a case of this kind.

The doctor gave the horse arecolin under these conditions, and told the owner that the horse would probably be dead by morning; he posted the horse next day, and sure enough there was a rupture of the stomach. What else could there have been?

It is further stated that lobelin sulphate relieves excitement and spasms quickly, and that is where we make an impression with the owner. If a stomach tube had been used and the horse saved for the farmer, would it not have made a good and lasting impression? Is it impressions or good results that we want?—*A. J. V. M.*

Major L. A. Merillat, the author, and Professor of Surgery in the M'Killip Veterinary College, writing to *The American Journal of Veterinary Medicine*, says:—

"I have been assigned to a large veterinary hospital overflowing with patients of all sorts, but chiefly with the great war scourge we have heard so much about since hostilities began, namely, mange. The rest are but the usual array of miscellaneous patients one would expect to find where horses are congregated in large numbers: poll-evil, quittors, fistulæ of the withers, lacerated wounds, necrobacillosis, three distinct kinds of lymphangitis, and the usual locomotor infirmities. There are no new problems the American Veterinary Service will not be able to manage, except possibly lymphangitis.

"There are two ways in vogue of handling mange—the dipping vat and the sulphur fumes chamber. The former was preferred by the English and the latter by the French. In this respect we are still non-committal, and shall remain so until both methods have been given a fair trial in our own service, where daily observations can be

made on a large number of subjects and checks. I have not been yet convinced that the old hand treatment is not as good as any where help is abundant and pains are taken to apply the parasiticide everywhere, and as thoroughly as possible. The dipping vat, of course, gives the best result where help is scarce, but, after all, I have already found that this, too, is not as effectual as one would desire when animals coming out are not immediately rubbed well, and at every part of the body to make the dipping solution enter into the skin recesses. Mere dipping is worthless, or at least almost worthless without this good rubbing, and since the immersions must be repeated six to eight times at intervals of four to eight days, the need of the hour is a more rapid method of cure.

" Whatever form of treatment is decided upon it must always be preceded by a thorough washing of the body to remove the scales and scabs. If this is done well the selection of the parasiticide is less important if rubbed in well and over the whole body, including no less than six inches of the root of the tail. Our experiments with hand treatment administered side by side with the others will be reported later, when enough comparative tests have been made to justify a statement. And of course no treatment amounts to much unless re-infection is prevented. Mange is a mighty disease. It is a fell scourge. Its control is of capital importance. Left unchecked it pesters, emaciates, destroys, and would in itself demoralise any service needing horses.

" Having now had the pleasure of observing the veterinary service from Missouri to the trenches I am supremely content with my military service, and, come what may, I shall always feel the sacrifice has not been in vain."

CATTLE-POISONING BY WATER DROP-WORT.

We have received from Mr. C. B. Moffat, of Enniscorthy, a note written at the suggestion of Mr. R. J. Moss, Registrar of the Royal Dublin Society, in which the question is asked, " Is *Oenanthe crocata* wholesome food ? " The question is put owing to the fact that about a month ago Mr. Moffat had occasion to observe a herd of cows browsing on this plant, and had been able to satisfy himself that no injurious effects resulted. As he justly remarks, the records of death from eating this plant leave no doubt as to its usually poisonous character. He cites a case, investigated by Mr. Moss in 1917, in which roots of this plant were found among the stomachic contents of four cows found dead on land that had been flooded. He is, therefore, led to enquire whether the poison is confined to the roots or if at particular seasons or in particular localities the green parts of the water drop-

wort are innocuous? Cornevin ("Plantes Vénéneuses") has stated that this plant, on which animals readily browse, leads to cases of poisoning every year; that all parts of the plant are toxic, the root being particularly so; and that drying does not destroy the noxious principle. Holmes (*Pharm. Journ.*, 1902, p. 431) refers to *Oenanthe crocata* as perhaps the most dangerous and virulently poisonous of our native plants. Long ("Plants Poisonous to Live Stock," p. 37) has more recently cited a formidable number of specific English instances confirming the judgment of Cornevin and Holmes. Nevertheless, notwithstanding the silence of these distinguished authorities on the point, the question raised by Mr. Moffat is not new. So long ago as 1845 an authority so eminent as the late Sir Robert Christison ("Poisons," p. 860) explained that while this plant has usually been held to be one of the most virulent of European vegetables, and seems well entitled to this character in general, yet climate or some other more obscure cause renders it inert in some situations. As Christison pointed out, the plant has been the subject of an uninterrupted series of observations since 1570, when Lobel directed attention to its poisonous properties. These observations show that in France, Germany, Holland, Spain, and various parts of England so far north as Liverpool, it is actively poisonous at all seasons of the year. Yet the careful experiments undertaken by Christison, while proving the virulence of the plant as grown near Woolwich and near Liverpool, showed that the same species as grown near Edinburgh is devoid of toxic properties. It is singular that little more is known now than Christison knew, and it is to be hoped that those competent to deal with the matter may be induced to undertake the research which is required to settle the questions raised by Mr. Moffat's confirmation from County Wexford of Sir Robert Christison's experience of three-quarters of a century ago as regards Midlothian.—*Nature.*

Correspondence.

In a letter to Mr. Horace L. Roberts, F.R.C.V.S., Dr. W. L. Williams, of the New York State Veterinary College, says:—"What you have told me regarding the entanglement of the thick umbilic cord as a cause of dystocia in the mare is very interesting. I shall make a note of this for future use. I note also what you say regarding the necrotic vaginitis. It appears that English veterinarians see a good deal of this trouble. I have observed a few cases, but not enough to get a clear idea of the cause. I am watching the literature from Great Britain rather closely, hoping to get the matter cleared up in my mind."

Personal.

LIEUTENANT-COLONEL T. B. WOLSTENHOLME, R.A.M.C. (T.), of Urmston, Manchester, has recently been awarded the Croix de Guerre; he is the son of Mr. John B. Wolstenholme, F.R.C.V.S., of Manchester.

Obituary.

HENRY SMITH, M.R.C.V.S. (WORTHING).

MR. HENRY SMITH, the well-known Sussex veterinary surgeon, died at his residence, Winton Lodge, Worthing, on June 27th, 1918, aged 56. He was the younger son of the late Dr. Samuel Smith, of Winchcombe, Gloucestershire. Educated at the Cheltenham Grammar School, he graduated at the R.V.C. London in July, 1884, being a prizeman and medallist of his year. He had practised in Worthing and Sussex for 32 years. He was Veterinary Inspector to the County Council for the Worthing Division of Sussex, Veterinary Surgeon to the Worthing Corporation, Inspector under the Board of Agriculture, and Vice-President of the Southern Counties Veterinary Society.

He was a skilled canine surgeon and an active member of the many horse and dog shows held in Worthing. He was well known all over the county and beyond for his professional skill and genial and pleasant manner. He was perhaps one of the first men to use chloroform in dog practice. He leaves a widow, two sons and three daughters, to whom much sympathy is extended. The elder of his two sons, Mr. Sam Smith, M.R.C.V.S., is following in his father's footsteps, and the younger is a Lieutenant in the Royal Sussex Regiment.

CAPTAIN A. R. ROUTLEDGE, F.R C.V.S. (LOUTH).

THE profession will learn with deep sorrow of the death of Captain Routledge. He was the son of Mr. James Routledge, J.P., and was born at Jarrow and educated at the Kepier Grammar School, Durham. He graduated at the Royal Veterinary College, Edinburgh, in May, 1895, and took the 2nd Fitzwygram prize in that year. He took his Fellowship degree on May 16th, 1903. He succeeded Mr. G. H. Kitchin, M.R.C.V.S., at Louth, on November 28th, 1906, and built up a large and successful practice, winning the esteem and regard of all classes. At the outbreak of war he answered the call of duty, joining the A.V.C., and serving from August 9th, 1914, until invalided out of the army, through ill-health contracted on active service, on April 10th, 1918, and died in the 4th Northern General Military Hospital, Lincoln, on June 27th, 1918. He was greatly esteemed by his comrades in arms,

and was a smart and efficient officer and veterinary surgeon. In civil practice he held the appointments of Inspector to the Parts of Lindsey, and the Board of Agriculture; Veterinary Surgeon to the Lincolnshire Agricultural Society; Examiner to the Worshipful Company of Farriers. He took a post-graduate course in Pathology in July, 1913. He was an active, energetic worker in his profession, lived for it and loved it.

During his army career he commanded a veterinary hospital at Bury St. Edmunds and in another part of Suffolk, and later on was entitled to wear two blue chevrons on his sleeve for service in France. His was a fine character, and he set a splendid example for others to follow. Ever ready to help on the work of his profession, he died all too soon, and at the age of 44 has left us all the poorer. The funeral service was held at the Parish Church, and he was buried with full military honours at the cemetery. Many members of the Town Council and a host of personal friends and local agriculturists attended the funeral to bid their last farewells.

He leaves a widow and young daughter to mourn his loss, for both of whom deep sympathy will be felt.

Reviews.

VETERINARY SURGICAL OPERATIONS. By Major Louis A. Merillat, Sr.V.S., V.C., U.S.A., Professor of Surgery in the Killip Veterinary College, Secretary of the A.V.M.A., etc. Second edition, revised and enlarged. Published by Alexander Eger, Chicago. 1918. Price 25s. net. London agents: Messrs. Baillière, Tindall & Cox.

The first edition of 3,000 copies of this book has been rapidly exhausted, and the second edition just out has been brought up to date, enlarged, revised, and partly re-written, and fifty new illustrations and four full-page plates added. Major Merillat has a big reputation in America as a veterinary surgeon, gained through great operating experience, and this work is full of good things and such a one as might be expected from a master of the subject. It is the third of the volumes on veterinary surgery produced by the author, the others dealing with "Animal Dentistry and Diseases of the Mouth," and "Principles of Veterinary Surgery."

The Professor's recipe for an ideal surgeon (and we write *ideal* because we know many good veterinary surgeons that lack some of the attributes) is that he should possess "theoretical knowledge, inventive genius, and practical adaptability, and be primarily keen on attention to detail. He must possess the health of an athlete, the strength of a giant, the manipulative dexterity of a magician, and the skill of an artisan." There are other attributes the professor enumerates, but these will do to be going on with. There are thirteen chapters in the book dealing with the daily surgical work to be under-

taken in a large clinique—castration and spaying fistulæ, throat operations, neurotomy, hernia, special amputations, choke, etc., and many minor operations and operations due to accidents are fully described. The book throughout is exceedingly well illustrated and one virtue in the text is that it is not always assumed that every surgical operation has a successful issue. The untoward results and accidents that may occur are given their proper place, and in many cases illustrated and described.

In a book where all the matter is good it is, perhaps, invidious to single out any one chapter for special commendation, but we think the pages on hernia are the plainest and most concise we have ever read. The volume may be accepted as a really first-class text book by the operating surgeon. The binding and finish of the work are beyond praise, and such as we seldom get in this country in connection with scientific books. We notice that the flank operation for ovariotomy is not described.

The Major makes three statements that will, perhaps, upset the men who believe that to doubt the orthodox faith is rank heresy; but it is evident that they are thoughtful statements, and therefore entitled to respect. They are as follows :—

(1) In castration—standing—" The near testicle is selected first, contrary to the custom of many experienced veterinarians, because in our hands this plan has yielded fewer narrow escapes from personal injury. Horses are more likely to kick while the second testicle is being removed than the first, because they are now on their guard, expecting a repetition of what has just occurred, and as they usually kick with the leg on the side injured, the danger is very materially lessened."

(2) Castrating cats.—" On account of the difficulty of coping with the feline gymnastics provoked by the restraint, and the operation itself, the castration of cats is not a popular operation." Well, we know veterinary establishments and colleges where all the tom cats for miles around have been castrated and most of them free of charge. Again, the operation is not a screeching, scratching fighting affair if one puts a leather hood over the cat's head, and gets a handy man to hold the feline. The chief difficulty with amateurs is to avoid cutting a tabby.

(3) This will greatly upset the elect, especially of the stiff and settled school. In *docking*, " it is not necessary to search for an intervertebral articulation through which to make the amputation; on the contrary, *section through a segment* [the italics are ours] *is more desirable*, because the exfoliation of the end of the segment will be more rapid than if the bi-section had been made through an articulation."

There are two tips (among many others) in the book worth remembering and trying by British veterinarians—(1) " The best remedy to inhibit the spread of *grease* that we have found is methylene blue and tannic acid, two drachms of the former in one gallon of a saturated solution of the latter. This is rubbed briskly into the affected skin twice a day. (2) After evacuating *a capped hock* use injections of 1 in 1,000 adrenalin chloride solution, and wad the wound. A very effective injection is also 2 per cent. methylene blue which arrests secretion and promotes prompt cicatrisation. G. M.

A TEXT BOOK OF THE PRINCIPLES AND PRACTICE OF VETERINARY MEDICINE.—By David S. White, D.V.M., Dean of the College and Professor of Veterinary Medicine in the Ohio State University, Columbus, Ohio. pp. 484, including index. Price 13s. net. Lea and Febiger, Philadelphia and New York.

THE fault of this book is that too much has been attempted in too little space—the result is that the matter is quite too superficial for the professional and quite too mystifying for the amateur. A book that claims to be scientific and up-to-date ought not to omit a consideration of the diseases of the dog and cat when discussing veterinary medicine. As a reminder of remedies and summary of supposed causes of disease it may be useful, but the peruser who follows its advice in the field will soon convince himself that a little knowledge is a very dangerous thing. Incidentally he might come to the conclusion that a case of laminitis was one of tetanus or pneumonia because laminitis is not mentioned at all in the book.

Criticising some of the statements in the work we do not believe that continued severe exercise is a cause of broken wind. It is stated that fluke in sheep cannot be treated effectively by medicine. Up-to-date knowledge ascribes very valuable results in this disease by treatment with oil of male shield fern (see French and other experiments). Even in the case of azoturia the up-to-date American treatment with oxalic acid is not given. Three per cent. sulphuric acid will not kill coccidiæ in faeces; the pure acid is necessary. In tuberculosis of the horse a prominent symptom is stiffness and often tenderness of the cervical vertebræ. This is not mentioned. Broncho-pneumonia in our experience is more common in the horse than in ox, sheep and swine. The author believes otherwise. The chapter on "Diseases of the Organs of Locomotion" is quite too anæmic or skeletal and almost useless to "the student, practitioner, investigator and intelligent stockman."

The best use for the book is as an "aide-mémoire," but the memory needs to be mature and discerning. G. M.

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NOTICES.

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